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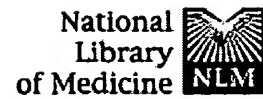
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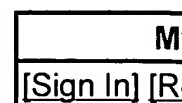
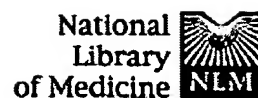
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Abnormal accumulation of NACP/alpha-synuclein in neurodegenerative disorders.

Takeda A, Mallory M, Sundsmo M, Honer W, Hansen Masliah E.

Department of Neurosciences, University of California, S Diego, School of Medicine La Jolla, 92093-0624, USA.

The precursor of the non-Abeta component of Alzheimer's disease amyloid (NACP) (also known as α -synuclein) is a presynaptic terminal molecule that accumulates in the plaques of Alzheimer's disease. Recent studies have shown that a mutation in NACP is associated with familial Parkinson's disease, and that Lewy bodies are immunoreactive with antibodies against this molecule. To clarify the patterns of accumulation and differences in abnormal compartmentalization, we studied NACP immunoreactivity using double immunolabeling and laser scanning confocal microscopy in the cortex of patients with various neurodegenerative disorders. In Lewy body variant of Alzheimer's disease, diffuse Lewy body disease, and Parkinson's disease, NACP was found to immunolabel cortical Lewy bodies, abnormal neurites, and dystrophic neurites in the plaques. Double-labeling studies showed that all three of these neuropathological structures also contain

ubiquitin, synaptophysin, and neurofilament (but not tau) immunoreactivity. In contrast, neurofibrillary tangles, neuropil threads, Pick bodies, ballooned neurons, and glia tangles (most of which were tau positive) were NACP negative. These results support the view that NACP specifically accumulates in diseases related to Lewy bodies such as Lewy body variant of Alzheimer's disease, diffuse Lewy body disease, and Parkinson's disease and suggests a role for this synaptic protein in the pathogenesis of neurodegeneration.

PMID: 9466562 [PubMed - indexed for MEDLINE]

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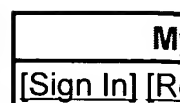
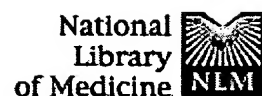
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NACP, a presynaptic protein, immunoreactivity Lewy bodies in Parkinson's disease.

**Wakabayashi K, Matsumoto K, Takayama K, Yoshim
M, Takahashi H.**

Brain Disease Research Center, Niigata University, Japan
koichi@bri.niigata-u.ac.jp

NACP, originally identified as a precursor of the non-Aβ component of Alzheimer's disease amyloid (NAC), is now known to be identical to alpha-synuclein, a presynaptic protein in the human brain. Recently, a mutation in the alpha-synuclein gene in families with autosomal dominant Parkinson's disease (PD) was identified. We carried out immunohistochemical examinations of the brains of sporadic PD patients using anti-NACP and anti-ubiquitin antibodies. Consistent with previous studies, the anti-NACP antibody immunostained the neuropil in a punctate pattern throughout the brain. Moreover, much stronger NACP immunoreactivity was found in Lewy bodies and degenerating neurites in the brainstem. Serial sections immunolabeled with anti-ubiquitin or anti-NACP showed that all ubiquitin-immunoreactive I were also NACP-immunoreactive. These findings suggest that alteration of NACP metabolism is involved in the pathogenesis of PD, particularly in Lewy body formation,

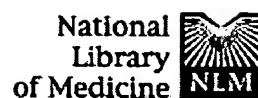
leading to neurodegeneration.

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NACP, a presynaptic protein, immunoreactivity Lewy bodies in Parkinson's disease.

**Wakabayashi K, Matsumoto K, Takayama K, Yoshim
M, Takahashi H.**

Brain Disease Research Center, Niigata University, Japan
koichi@bri.niigata-u.ac.jp

NACP, originally identified as a precursor of the non-Aβ component of Alzheimer's disease amyloid (NAC), is now known to be identical to alpha-synuclein, a presynaptic protein in the human brain. Recently, a mutation in the alpha-synuclein gene in families with autosomal dominant Parkinson's disease (PD) was identified. We carried out immunohistochemical examinations of the brains of sporadic PD patients using anti-NACP and anti-ubiquitin antibodies. Consistent with previous studies, the anti-NACP antibody immunostained the neuropil in a punctate pattern throughout the brain. Moreover, much stronger NACP immunoreactivity was found in Lewy bodies and degenerating neurites in the brainstem. Serial sections immunolabeled with anti-ubiquitin or anti-NACP showed that all ubiquitin-immunoreactive I were also NACP-immunoreactive. These findings suggest that alteration of NACP metabolism is involved in the pathogenesis of PD, particularly in Lewy body formation,

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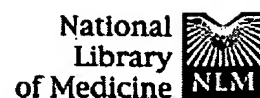
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Abnormal distribution of the non-Abeta component of Alzheimer's disease amyloid precursor/alpha-synuclein in Lewy body disease as revealed by proteinase K and formic acid pretreatment.

Takeda A, Hashimoto M, Mallory M, Sundsumo M, Hansen L, Sisk A, Masliah E.

Department of Neurosciences, University of California, San Diego, School of Medicine, La Jolla 92093-0624, USA.

The precursor of the non-Abeta component of Alzheimer's disease amyloid (NACP) (also known as alpha-synuclein) presynaptic terminal molecule that abnormally accumulates in the plaques of Alzheimer's disease (AD) and in the Lewy bodies (LBs) of Lewy body variant of AD, diffuse Lewy body disease, and Parkinson's disease. To better understand the distribution of NACP/alpha-synuclein and its fragments in the LB-bearing neurons and neurites, as well as to clarify patterns of NACP/alpha-synuclein compartmentalization, we studied NACP/alpha-synuclein immunoreactivity using antibodies against the C-terminal, N-terminal, and NAC regions after Proteinase K and formic acid treatment in the cortex of patients with LBs. Furthermore, studies of the subcellular localization of NACP/alpha-synuclein within LB-bearing neurons were performed by immunogold electron

microscopy. These studies showed that the N-terminal antibody immunolabeled the LBs and dystrophic neurites with great intensity and, to a lesser extent, the synapses. In contrast, the C-terminal antibody strongly labeled the synapses and, to a lesser extent, the LBs and dystrophic neurites. Whereas Proteinase K treatment enhanced NACP/alpha-synuclein immunoreactivity with the C-term antibody, it diminished the N-terminal NACP/alpha-synuclein immunoreactivity. Furthermore, formic acid enhanced LB and dystrophic neurite labeling with both the C- and N-terminal antibodies. In addition, whereas without pretreatment only slight anti-NAC immunoreactivity was found in the LBs, formic acid pretreatment revealed an extensive anti-NAC immunostaining of LBs, plaques, and glial cells. Ultrastructural analysis revealed that NACP/alpha-synuclein immunoreactivity was diffusely distributed with the amorphous electron-dense material in the LBs and as small clusters in the filaments of LBs and neurites. These results support the view that aggregated NACP/alpha-synuclein might play an important role in the pathogenesis of disorders associated with LBs.

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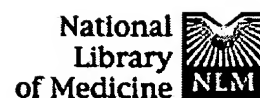
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Recently, we have shown that the precursor of the non-A β component of Alzheimer's disease amyloid (NACP), also known as alpha-synuclein, is a major component of Lewy bodies (LBs) as well as neuronal and glial cytoplasmic inclusions in multiple system atrophy (MSA). To elucidate whether the accumulation of NACP is specific to LB disease and MSA, we further studied 83 autopsied cases with various neurological disorders, using anti-NACP antibodies. In LB disease, NACP immunoreactivity was present in all of the LBs and Lewy neurites in both the central and peripheral nervous systems, the pale bodies in the substantia nigra, and dystrophic neurites in the hippocampal CA2/3 region. Immunoelectron microscopy revealed that the reaction product was localized within filamentous structures and associated granular structures. In MSA, NACP

immunoreactivity was found in the intracytoplasmic inclusions of both neuronal and oligodendroglial cells, neuronal intranuclear inclusions, and swollen neuronal processes. No NACP immunoreactivity was found in a variety of other neuronal or glial inclusions in other disorders including Alzheimer's disease, Pick's disease, progressive supranuclear palsy, corticobasal degeneration, motor neuron disease and triplet-repeat diseases. These findings strongly suggest that the accumulation of NACP is a cytopathological feature common to LB disease and MSA.

PMID: 9829807 [PubMed - indexed for MEDLINE]

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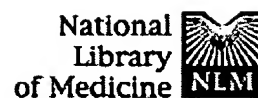
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Wakabayashi K, Hayashi S, Kakita A, Yamada M, Toyoshima Y, Yoshimoto M, Takahashi H.

Brain Disease Research Center, Brain Research Institute, Niigata University, Japan. koichi@bri.niigata-u.ac.jp

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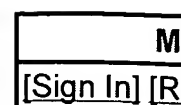
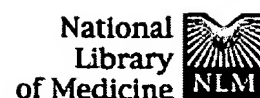
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Immunohistochemical localization of amyloid beta protein with amino-terminal aspartate in the cerebral cortex of patients with Alzheimer's disease.

Arai T, Akiyama H, Ikeda K, Kondo H, Mori H.

Department of Neuropathology, Tokyo Institute of Psychiatry, 2-1-8 Kamikitazawa, Setagaya-ku, Tokyo 156 8585, Japan. arai@prit.go.jp

We investigated immunohistochemically the localization amyloid beta-protein (Abeta) with amino-terminal aspartate (N1[D]) in brains of patients with Alzheimer's disease, diffuse Lewy body disease and Down's syndrome. A monoclonal antibody, 4G8, which recognizes the middle portion of Abeta, was used as a reference antibody to label the total Abeta deposits. Double staining with anti-Abeta(N1[D]) and 4G8 revealed that Abeta deposits in the subiculum and the neocortical deep layers often lacked N1[D] immunoreactivity, indicating N-terminal truncation of Abeta in these deposits. Abeta deposits in the neocortical superficial layers and the presubicular parvocortical layer always contained Abeta with N1[D]. Such regional as well as laminar differences in the distribution of Abeta beginning at N1[D] suggest that some local factors influence N-terminal

processing of Abeta deposited in the brain. Copyright 199
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PMID: 10095028 [PubMed - indexed for MEDLINE]

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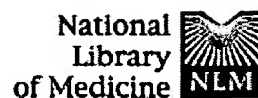
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FULL-TEXT ARTICLE**

Alpha-synuclein accumulates in Lewy bodies in Parkinson's disease and dementia with Lewy bodies but not in Alzheimer's disease beta-amyloid plaques.

Bayer TA, Jakala P, Hartmann T, Havas L, McLean C, Culvenor JG, Li QX, Masters CL, Falkai P, Beyreuther K.

Department of Psychiatry, University of Bonn Medical Center, Germany. bayer@uni-bonn.de

A growing body of evidence suggests that the non-Abeta component of Alzheimer's disease amyloid precursor protein (NACP) or alpha-synuclein contributes to the neurodegenerative processes in Alzheimer's disease (AD), Parkinson's disease (PD) and dementia with Lewy bodies (DLB). In the present study antisera to the N terminus and NAC domain of the alpha-synuclein protein were employed to elucidate the expression pattern in brains of patients with AD, PD, DLB and control specimen. Alpha-synuclein exhibited an overall punctuate expression profile compatible with a synaptic function. Interestingly, while Lewy bodies were strongly immunoreactive, none of the alpha-synuclein antisera revealed staining in mature beta-amyloid plaques in AD. These observations suggest that alpha-synuclein does

contribute to late neurodegenerative processes in AD brai

PMID: 10465711 [PubMed - indexed for MEDLINE]

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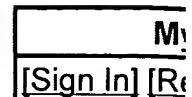
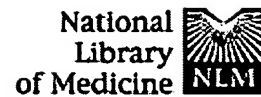
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ARCH NEUROL

Deposition of beta-amyloid subtypes 40 and 42 differentiates dementia with Lewy bodies from Alzheimer disease.

Lippa CF, Ozawa K, Mann DM, Ishii K, Smith TW, Arawaka S, Mori H.

Department of Neurology, MCP-Hahnemann University, Philadelphia, PA 19129, USA. lippa@auhs.edu

BACKGROUND: Alterations in the metabolism of the amyloid precursor protein and the formation of beta-amyloid (Abeta) plaques are associated with neuronal death in Alzheimer disease (AD). The plaque subtype Abeta(x-42) occurs as an early event, with Abeta(x-40) plaques forming a later stage. In dementia with Lewy bodies (DLB), an increase in the amount of cortical Abeta occurs without severe cortical neuronal losses. **OBJECTIVE:** To advance understanding of the natural history of Abeta in neurodegenerative diseases. **DESIGN:** We evaluated the expression of Abeta(x-40) and Abeta(x-42) in DLB using monoclonal antibodies and immunohistochemical techniques in 5 brain regions. The data were compared with those elicited with normal aging and from patients with AD. **SETTING AND PATIENTS:** A postmortem study involving 19 patients with DLB without concurrent neuritic

degeneration, 10 patients with AD, and 17 aged persons without dementia for control subjects. RESULTS: The A β plaques were more numerous in patients with DLB than in controls in most brain regions, although the A β (x-42) plaque subtype was predominant in both conditions. Over A β (x-42) plaque density was similar in patients with DLB and those with AD, but A β (x-40) plaques were more numerous in persons with AD than in those with DLB. The ratio of A β (x-40) to A β (x-42) plaques was significantly reduced in persons with DLB compared with patients with AD. CONCLUSIONS: The A β plaques were more numerous in patients with DLB than persons with normal aging, but the plaque subtypes were similar. The relative proportion of the 2 A β plaque subtypes in DLB is distinguishable from that in AD.

PMID: 10488812 [PubMed - indexed for MEDLINE]

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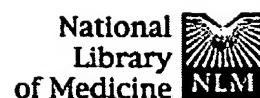
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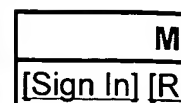
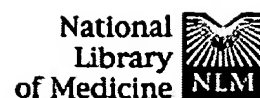
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PMID: 10488812 [PubMed - indexed for MEDLINE]

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Non-Abeta component of Alzheimer's disease amyloid (NAC) revisited. NAC and alpha-synuclein are not associated with Abeta amyloid.

Culvenor JG, McLean CA, Cutt S, Campbell BC, Maloney F, Jakala P, Hartmann T, Beyreuther K, Masters CL, Doolan P, QX.

Department of Pathology, The University of Melbourne, Parkville, Victoria, Australia.

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to alphaSN(75-91) to label cortical and hippocampal sections of pathologically proven AD cases, we found no evidence NAC in Abeta amyloid plaques. Double labeling of tissue sections in mixed DLB/AD cases revealed alphaSN in dystrophic neuritic processes, some of which were in close association with Abeta plaques restricted to the CA1 hippocampal region. In brain homogenates alphaSN was predominantly recovered in the cytosolic fraction as a 16-kDa protein on Western analysis; however, significant amount aggregated and alphaSN fragments were also found in urea extracts of SDS-insoluble material from DLB and PD cases. NAC antibodies identified an endogenous fragment of 6 kDa in the cytosolic and urea-soluble brain fractions. This fragment may be produced as a consequence of alphaSN aggregation or alternatively may accelerate aggregation of the full-length alphaSN.

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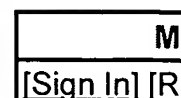
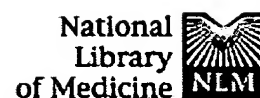
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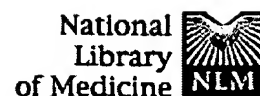
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Cellular co-localization of phosphorylated tau- a NACP/alpha-synuclein-epitopes in lewy bodies in sporadic Parkinson's disease and in dementia with Lewy bodies.

Arima K, Hirai S, Sunohara N, Aoto K, Izumiyama Y, Ueda K, Ikeda K, Kawai M.

Department of Ultrastructure and Histochemistry, Tokyo Institute of Psychiatry, 2-1-8 Kamikitazawa, Setagaya-ku, Tokyo, Japan. arima@prit.go.jp

The precursor of the non-Abeta-component of Alzheimer's disease (AD) amyloid (NACP, alpha-synuclein) aggregate into insoluble filaments of Lewy bodies (LBs) in Parkinson's disease (PD) and dementia with LBs (DLB). The microtubule-associated protein tau is an integral component of filaments of neurofibrillary tangles (NFTs). NFTs are occasionally found in brains of PD and DLB; however, the presence of NFTs or tau-epitopes within LB-containing neurons is rare. Double-immunofluorescence study and peroxidase-immunohistochemical study in serial sections, performed to examine the co-localization of tau- and NACP epitopes in the brainstem of PD and DLB, demonstrated that four different epitopes of tau including phosphorylation-dependent and independent ones were present in a minority

LBs, but more often than previously considered. A tau (tau) epitope was localized to filaments in the outer layers of brainstem-type LBs by immunoelectron microscopy. Therefore, we conclude that tau is incorporated into filament in certain LBs. Extensive investigation has enabled us to classify this co-localization into four types: type 1, LBs with ring-shaped tau-immunoreactivity; type 2, LBs surrounding NFTs; type 3, NACP- and tau-immunoreactive filamentous and granular masses; and type 4, NACP- and tau-immunoreactive dystrophic neurites. This study raises a new question whether aggregation and hyperphosphorylation of tau in PD and DLB are triggered by the collapse of intraneuronal organization of microtubules due to NACP-filament aggregation in neuronal perikarya and axons.

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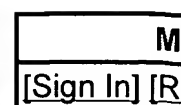
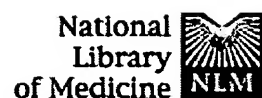
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**ELSEVIER SCIENCE
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Cellular co-localization of phosphorylated tau- a NACP/alpha-synuclein-epitopes in lewy bodies in sporadic Parkinson's disease and in dementia with Lewy bodies.

Arima K, Hirai S, Sunohara N, Aoto K, Izumiyama Y, Ueda K, Ikeda K, Kawai M.

Department of Ultrastructure and Histochemistry, Tokyo Institute of Psychiatry, 2-1-8 Kamikitazawa, Setagaya-ku, Tokyo, Japan. arima@prit.go.jp

The precursor of the non-Abeta-component of Alzheimer's disease (AD) amyloid (NACP, alpha-synuclein) aggregate into insoluble filaments of Lewy bodies (LBs) in Parkinson's disease (PD) and dementia with LBs (DLB). The microtubule-associated protein tau is an integral component of filaments of neurofibrillary tangles (NFTs). NFTs are occasionally found in brains of PD and DLB; however, the presence of NFTs or tau-epitopes within LB-containing neurons is rare. Double-immunofluorescence study and peroxidase-immunohistochemical study in serial sections, performed to examine the co-localization of tau- and NACP epitopes in the brainstem of PD and DLB, demonstrated that four different epitopes of tau including phosphorylation-dependent and independent ones were present in a minority

LBs, but more often than previously considered. A tau (tau) epitope was localized to filaments in the outer layers of brainstem-type LBs by immunoelectron microscopy. Therefore, we conclude that tau is incorporated into filaments in certain LBs. Extensive investigation has enabled us to classify this co-localization into four types: type 1, LBs with ring-shaped tau-immunoreactivity; type 2, LBs surrounding NFTs; type 3, NACP- and tau-immunoreactive filamentous and granular masses; and type 4, NACP- and tau-immunoreactive dystrophic neurites. This study raises a question whether aggregation and hyperphosphorylation of tau in PD and DLB are triggered by the collapse of intraneuronal organization of microtubules due to NACP-filament aggregation in neuronal perikarya and axons.

PMID: 10528110 [PubMed - indexed for MEDLINE]

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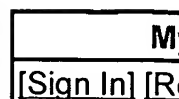
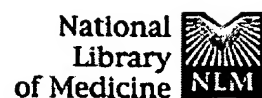
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Widespread occurrence of alpha-synuclein/NAC immunoreactive neuronal inclusions in juvenile adult-onset Hallervorden-Spatz disease with Lewy bodies.

Wakabayashi K, Yoshimoto M, Fukushima T, Koide I, Horikawa Y, Morita T, Takahashi H.

Brain Disease Research Center, Brain Research Institute, Niigata University, Japan.

Alpha-Synuclein (originally called precursor of the non-Abeta component of Alzheimer's disease amyloid-NACP) presynaptic nerve terminal protein and is now known to be a major component of Lewy bodies (LBs) in Parkinson's disease. Previous studies have shown that LBs are occasionally found in patients with Hallervorden-Spatz disease (HSD), a hereditary or sporadic neuroaxonal dystrophy. Therefore, an immunocytochemical examination of the brain tissues from two patients with HSD for alpha-synuclein/NACP was performed. In both cases, LBs were observed in the substantia nigra, locus ceruleus and other subcortical nuclei. These LBs were strongly immunolabeled with anti-alpha-synuclein/NACP. Moreover, abnormal al

synuclein/NACP-immunoreactive structures in the neuron somata and processes were found in the cerebral neocortex, hippocampus, basal ganglia, thalamus, pontine and inferior olivary nuclei, spinal grey matter, and peripheral sympathetic ganglia. Although numerous dystrophic axons (spheroids) were found throughout the brain, either none or only a few were positive for alpha-synuclein/NACP. These findings suggest that widespread accumulation of alpha-synuclein/NACP is a pathological feature in patients suffering from HSD with LBs, and that this phenomenon is unrelated to axonal spheroid formation.

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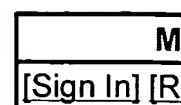
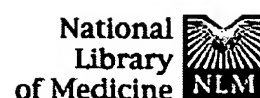
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Fibrils formed in vitro from alpha-synuclein and two mutant forms linked to Parkinson's disease typical amyloid.

Conway KA, Harper JD, Lansbury PT Jr.

Center for Neurologic Diseases, Brigham and Women's Hospital and Department of Neurology, Harvard Medical School, Boston, Massachusetts 02115, USA.

Two missense mutations in the gene encoding alpha-synuclein have been linked to rare, early-onset forms of Parkinson's disease (PD). These forms of PD, as well as the common idiopathic form, are characterized by the presence of cytoplasmic neuronal deposits, called Lewy bodies, in the affected region of the brain. Lewy bodies contain alpha-synuclein in a form that resembles fibrillar Aβ derived from Alzheimer's disease (AD) amyloid plaques. One of the mutant forms of alpha-synuclein (A53T) fibrillizes more rapidly in vitro than does the wild-type protein, suggesting that a correlation may exist between the rate of in vitro fibrillization and/or oligomerization and the progression of PD, analogous to the relationship between Aβ fibrillization in vitro and familial AD. In this paper, fibrils generated in

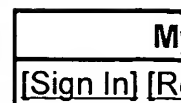
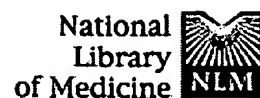
vitro from alpha-synuclein, wild-type and both mutant for are shown to possess very similar features that are characteristic of amyloid fibrils, including a wound and predominantly unbranched morphology (demonstrated by atomic force and electron microscopies), distinctive dye-binding properties (Congo red and thioflavin T), and antiparallel beta-sheet structure (Fourier transform infrared spectroscopy and circular dichroism spectroscopy). alpha-Synuclein fibrils are relatively resistant to proteolysis, a property shared by fibrillar Abeta and the disease-associated fibrillar form of the prion protein. These data suggest that like AD, is a brain amyloid disease that, unlike AD, is characterized by cytoplasmic amyloid (Lewy bodies). In addition to amyloid fibrils, a small oligomeric form of alpha-synuclein, which may be analogous to the Abeta protofibril was observed prior to the appearance of fibrils. This species or a related one, rather than the fibril itself, may be responsible for neuronal death.

PMID: 10704204 [PubMed - indexed for MEDLINE]

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Accumulation of insoluble alpha-synuclein in dementia with Lewy bodies.

Campbell BC, Li QX, Culvenor JG, Jakala P, Cappai Beyreuther K, Masters CL, McLean CA.

Department of Pathology, The University of Melbourne, 3010, Australia.

The alpha-synuclein (alpha SN) protein is thought to play central role in the pathogenesis of neurodegenerative disease where it aggregates to form intracellular inclusions. We have used Western blotting to examine the expression levels and solubility of alpha SN in brain homogenates from dementia with Lewy bodies (DLB), Parkinson's disease (PD), Alzheimer's disease (AD), and normal controls using samples from the parahippocampus/transentorhinal cortex. Compared to controls, DLB brains accumulate significantly greater amounts of sodium dodecyl sulfate (SDS)-soluble and SDS insoluble alpha SN but levels of Triton X-100-soluble alpha SN do not change. Levels of synaptophysin, a marker of synaptic integrity, were significantly lower in DLB cases than in normal aged controls regardless of whether concurrent changes of AD were present. This limbic synaptic dysfunction may contribute to cognitive impairment in DLB. Whether aggregated alpha SN is a cause or effect of the

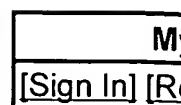
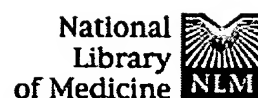
disease process in DLB and PD remains to be determined the presence of aggregated alpha SN is consistent with a pathogenesis similar to that associated with aggregates of Abeta amyloid in AD. Copyright 2000 Academic Press.

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Neuropathology of synuclein aggregates.

Duda JE, Lee VM, Trojanowski JQ.

Center For Neurodegenerative Disease Research, University of Pennsylvania School of Medicine, Philadelphia, PA 19104 USA.

Beginning with the isolation of the fragment of alpha-synuclein (alpha-syn) known as the non-Abeta component of amyloid plaques (NAC peptide) from Alzheimer's disease (AD) brains, alpha-syn has been increasingly implicated in the pathogenesis of neurodegenerative diseases, which are not classified as synucleinopathies. Indeed, unequivocal evidence linking abnormal alpha-syn to mechanisms of brain degeneration came from discoveries of missense mutations in the alpha-syn gene pathogenic for familial Parkinson's disease (PD) in rare kindreds. Shortly thereafter, alpha-syn was shown to be a major component of Lewy bodies (LBs) and Lewy neurites in sporadic PD, dementia with LBs (DLB), and the LB variant of AD. Also, studies of brains from patients with AD caused by genetic abnormalities demonstrated many alpha-syn positive LBs. Further, alpha-syn was implicated in the formation of the glial (GCIs) and neuronal cytoplasmic inclusions of multiple system atrophy, and the LBs, GCIs, and neuraxonal spheroids of neurodegeneration with brain iron

accumulation type 1. Recently, two other members of the synuclein family, beta- and gamma-synuclein, have also been recognized to play a role in the pathogenesis of novel axonal lesions in PD and DLB. Evidence for a role of alpha-syn in the formation of filamentous aggregates was reinforced by *in vitro* studies showing aggregation and fibrillogenesis of mutant and wild type alpha-syn. Indeed, since the aggregation of brain proteins into presumptively toxic lesions is emerging as a common but poorly understood mechanistic theme in sporadic and hereditary neurodegenerative diseases, clarification of the mechanism of synuclein aggregation could augment efforts to develop novel and more effective therapies for many neurodegenerative disorders. Copyright 2000 Wiley-Liss, Inc.

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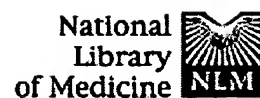
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Lewy body pathology in Alzheimer's disease.

Kotzbauer PT, Trojanowsk JQ, Lee VM.

Center for Neurodegenerative Disease Research, University of Pennsylvania School of Medicine, Philadelphia, USA.

Lewy bodies, the characteristic pathological lesion of substantia nigra neurons in Parkinson's disease (PD), are frequently observed to accompany the amyloid plaque and neurofibrillary tangle pathology of Alzheimer's disease (AD). However the typical anatomic distribution of Lewy bodies in AD is distinct from PD. The most common site of occurrence is the amygdala, where Lewy bodies are observed in approximately 60% of both sporadic and familial AD. Other common sites of occurrence include the periamygdaloid and entorhinal cortex, while neocortical and brainstem areas develop Lewy bodies in a lower percentage of cases. In contrast, dementia with Lewy bodies (DLB), defined by widespread neocortical and brainstem Lewy bodies but frequently accompanied by variable levels of AD-type pathology, represents the other end of a spectrum of pathology associated with dementia. The observation of Lewy bodies in familial AD cases suggests that like neurofibrillary tangles, the formation of Lewy bodies can be induced by a pathological state caused by Abeta-amyloid overproduction.

The role of Lewy body formation in the dysfunction and degeneration of neurons remains unclear. The protein alpha-synuclein appears to be an important structural component of Lewy bodies, an observation spurred by the discovery of point mutations in the alpha-synuclein gene linked to rare cases of autosomal dominant PD. Further investigation of alpha-synuclein and its relationship to pathological conditions promoting Lewy body formation in AD, PD, and DLB may yield further insight into pathogenesis of these diseases.

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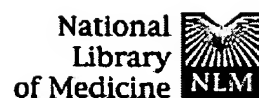
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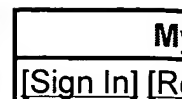
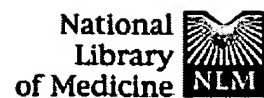
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NAC, a 35-residue peptide derived from the neuronal pro-
alpha-synuclein/NAC precursor, is tightly associated with
Abeta fibrils in Alzheimer's disease amyloid, and alpha-
synuclein has recently been shown to bind Abeta in vitro.
We have studied the interaction between Abeta and synuclein
aiming at determining segments in alpha-synuclein that can
account for the binding, as well as identifying a possible
interaction between Abeta and the beta-type synuclein. We
report that Abeta binds to native and recombinant alpha-
synuclein, and to beta-synuclein in an SDS-sensitive
interaction (IC₅₀ approx. 20 microM), as determined by
chemical cross-linking and solid-phase binding assays. alpha-
Synuclein and beta-synuclein were found to stimulate Abeta
aggregation in vitro to the same extent. The synucleins also

displayed Abeta-inhibitable binding of NAC and they were capable of forming dimers. Using proteolytic fragmentation of alpha-synuclein and cross-linking to 125I-Abeta, we identified two consecutive binding domains (residues 1-50 and 57-97) by Edman degradation and mass spectrometric analysis, and a synthetic peptide comprising residues 32-50 possessed Abeta-binding activity. To test further the possible significance in pathology, alpha-synuclein was biotinylated and shown to bind specifically to amyloid plaques in a brain with Alzheimer's disease. It is proposed that the multiple Abeta-binding sites in alpha-synuclein are involved in the development of amyloid plaques.

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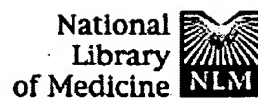
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Toxicity of non- α -beta component of Alzheimer's disease amyloid, and N-terminal fragments thereof correlates to formation of beta-sheet structure and fibrils.

Bodles AM, Guthrie DJ, Harriott P, Campbell P, Irvin GB.

Centre for Peptide and Protein Engineering, School of Biology and Biochemistry, The Queen's University of Belfast, Northern Ireland.

The non- α -beta component of Alzheimer's disease amyloid (NAC) and its precursor α -synuclein have been linked to amyloidogenesis in Alzheimer's disease (AD), Parkinson's disease (PD) and dementia with Lewy bodies (DLB). Previously we have shown that NAC forms beta-sheet structures and fibrils [El-Agnaf, O.M.A., Bodles, A.M., Guthrie, D.J.S., Harriott, P. & Irvine, G.B. (1998) Eur. J. Biochem. 258, 157-163]. As a measure of their neurotoxic potential we have examined the ability of fresh and aged NAC and fragments thereof to inhibit the reduction of the redox dye 3-(4, 5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide by rat pheochromocytoma PC12 cells. Micromolar concentrations of NAC and fragments

thereof display varying degrees of toxicity. On immediate dissolution and after an incubation period for 3 days at 37 degrees C the full-length peptide and fragments NAC(3-1 and NAC(1-18) scrambled sequence [NAC(1-18 s)] were toxic, whereas fragments NAC(1-13) and NAC(6-14) were not. CD indicates that NAC(3-18) and NAC(1-18 s) exhibit beta-sheet secondary structure in aqueous solution, where NAC(1-13) and NAC(6-14) do not. NAC(3-18) aggregate as indicated by concentration of peptide remaining in solution after 3 days measured by an HPLC assay, and forms fibrils as determined by electron microscopy. However, although some fibrils were detected for NAC(1-18 s) it does not come out of solution to a significant degree. Fragments NAC(1-13) and NAC(6-14) form few fibrils and remain in solution. These findings indicate that the ability of the central region of NAC to form beta-sheet secondary structures is important in determining the toxicity of the peptide. This contrasts with what has been reported previously for most Aβ peptide where their toxicity appears to require the peptide to have formed fibrillary aggregates as well as displaying beta-sheet. The results suggest that an intermediate, which exhibits beta-sheet structure, may be responsible for the toxic properties of NAC and provides further evidence for the role of NAC in the pathogenesis of AD, PD and DLB.

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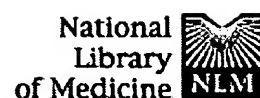
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Alpha-synuclein aggregation and neurodegenerative diseases.

Ma QL, Chan P, Yoshii M, Ueda K.

Department of Neural Plasticity, Tokyo Institute of Psychiatry, Tokyo 156-8585, Japan.

Alpha-synuclein is a neuronal protein originally identified in Alzheimer's disease (AD) amyloid plaques in 1993 and named non-Abeta component precursor (NACP) [92]. Later the discovery of two missense mutations (G88C and G209C) which resulted in Ala30Pro (A30P) and Ala53Thr (A53T) substitutions, of the alpha-synuclein gene in certain autosomal-dominant early onset familial Parkinson's disease (PD) has greatly promoted the understanding of the role of alpha-synuclein in the pathogenesis of neurodegenerative diseases, such as PD, dementia with Lewy bodies (DLB), multiple system atrophy (MSA) [5,6,51,75]. At present, it is widely accepted that alpha-synuclein may play a central role in several neurodegenerative disorders because of the presence of insoluble alpha-synuclein as the major fibrillar component of inclusion bodies. From the cloning of the human alpha-synuclein cDNA in 1993 to the present, alpha-synuclein has been carefully documented in many aspects. In this article, we review the progress of studies on alpha-

synuclein and its role in alpha-synuclein-related neurodegenerative diseases.

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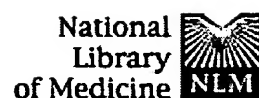
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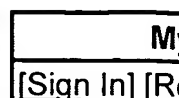
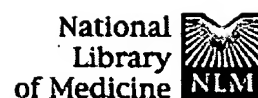
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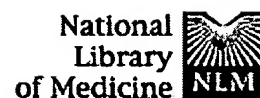
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Monoclonal antibodies raised against Lewy bodies in brains from subjects with Parkinson's disease

Hirsch E, Ruberg M, Dardenne M, Portier MM, Javoy Agid F, Bach JF, Agid Y.

Monoclonal antibodies which immunocytochemically label Lewy bodies on sections of substantia nigra from subjects with Parkinson's disease were produced by immunization of mice with substantia nigra and locus coeruleus containing Lewy bodies from parkinsonian subjects post-mortem. Tests of specificity indicate that the antibodies do not recognize the same antigen. One of the antibodies (G7) immunocytochemically labels only Lewy bodies, the other (G9) also faintly labels the cell bodies of nigral dopamine neurons and cerebellar Purkinje cells in both normal and parkinsonian brains. Absorption experiments show, however, that the G7 antigen is present in normal substantia nigra as is the G9 antigen in normal substantia nigra and Purkinje cells. Neither of the antibodies seems to be directed against neurofilament protein. Immunoblots after two-dimensional electrophoresis indicate that antibody G7 labels a protein with an iso-electric point around 5.6 and a mol. wt. of approximately 40 kdalton, whereas the protein labeled by antibody G9 has an iso-electric point of near 8 and a mol. wt. above 70 kdalton.



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Monoclonal antibodies raised against Lewy bodies in brains from subjects with Parkinson's disease

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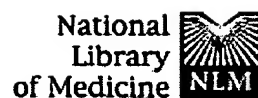
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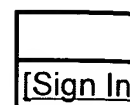
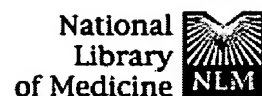
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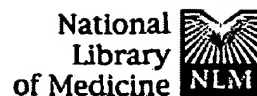
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☐ **70:** [Cotzias GC, Papavasiliou PS.](#)

[Related Articles, I](#)



Autoimmunity in patients treated with levodopa.

JAMA. 1969 Feb 17;207(7):1353-4. No abstract available.

PMID: 5304532 [PubMed - indexed for MEDLINE]

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=> S Lewy body OR alpha-synuclein

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36 FILES SEARCHED...

58 FILES SEARCHED...

71 FILES SEARCHED...

L1 31933 LEWY BODY OR ALPHA-SYNUCLEIN

=> S L1 Abeta

MISSING OPERATOR L1 ABETA

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=> S L1 AND abeta

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62 FILES SEARCHED...

L2 1623 L1 AND ABETA

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L3 1466 DUP REM L2 (157 DUPLICATES REMOVED)

=> S L3 AND immunization

15 FILES SEARCHED...

32 FILES SEARCHED...

47 FILES SEARCHED...

62 FILES SEARCHED...

L4 21 L3 AND IMMUNIZATION

=> D L4 1-21

L4 ANSWER 1 OF 21 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

AN 2004:355388 BIOSIS

DN PREV200400362351

TI Overcoming antigen masking of anti-amyloidbeta antibodies reveals breaking
of B cell tolerance by virus-like particles in amyloidbeta immunized
amyloid precursor protein transgenic mice.

AU Li, Qingyou; Cao, Chuanhai; Chackerian, Bryce; Schiller, John; Gordon,
Marcia; Ugen, Kenneth E.; Morgan, Dave [Reprint Author]

CS Dept PharmacolAlzheimers Res Lab, Univ S Florida, Tampa, FL, 33612, USA
qli@hsc.usf.edu; ccao@hsc.usf.edu; brycec@nih.gov;
schillej@dc37a.nci.nih.gov; mgordon@hsc.usf.edu; kugen@hsc.usf.edu;
dmorgan@hsc.usf.edu

SO BMC Neuroscience, (June 8 2004) Vol. 5, No. June 8. print.

ISSN: 1471-2202 (ISSN online).

DT Article

LA English

ED Entered STN: 5 Sep 2004

Last Updated on STN: 5 Sep 2004

L4 ANSWER 2 OF 21 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN

AN 2002-13062 BIOTECHDS

TI Composition comprising fusion protein which comprises binding portion
that binds amyloid peptide epitope and a segment crossing blood-brain
barrier, useful for treating disease states associated with amyloidosis;
recombinant protein gene production, fusion protein composition,
vector expression in host cell, useful in disease therapy and
diagnosis

AU NICOLAU Y C

PA AVENTIS PHARMA SA; UNIV PASTEUR LOUIS

PI WO 2002021141 14 Mar 2002

AI WO 2000-US27632 6 Sep 2000

PRAI US 2000-255033 12 Dec 2000
DT Patent
LA English
OS WPI: 2002-351803 [38]

L4 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:412731 CAPLUS
DN 140:417964
TI Prevention and treatment of synucleinopathic disease by administering
agents that induce a beneficial immunogenic response against ***Lewy***
bodies

IN Schenk, Dale B.; Masliah, Eliezer
PA Elan Pharmaceuticals, Inc., USA; The Regents of the University of
California
SO PCT Int. Appl., 78 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 9

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004041067	A2	20040521	WO 2003-US34527	20031031
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,				
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	OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,				
	TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,				
	BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,				
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	TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRAI US 2002-423012P P 20021101

L4 ANSWER 4 OF 21 IFIPAT COPYRIGHT 2005 IFI on STN
AN 10243450 IFIPAT;IFIUDB;IFICDB
TI NOVEL METHOD FOR DOWN-REGULATION OF AMYLOID; ADMINISTERING AN
AMYLOIDOGENIC POLYPEPTIDE OR SUBSEQUENCE THEREOF TO INDUCES PRODUCTION OF
ANTIBODIES AGAINST THE AMYLOIDOGENIC POLYPEPTIDE; TREATMENT OF
ALZHEIMER'S DISEASE

IN Jensen Martin Roland (DK); Nielsen Klaus Gregorius (DK); Rasmussen Peter
Birk (DK)

PA Unassigned Or Assigned To Individual (68000)

PI US 2002187157 A1 20021212

AI US 2001-785215 20010220

PRAI PA 2000-265 20000221

US 2000-186295P 20000301 (Provisional)

FI US 2002187157 20021212

DT Utility; Patent Application - First Publication **
00001000

FS CHEMICAL
APPLICATION

CLMN 58

GI 1 Figure(s).

FIG. 1: Schematic depiction of Autovac variants derived from the amyloid precursor protein with the purpose of generating antibody responses against the A beta protein A beta-43 (or C100). The APP is shown schematically at the top of the figure and the remaining schematic constructs show that the model epitopes P2 and P30 are substituted or inserted into various truncations of APP. In the figure, the black pattern indicates the APP signal sequence, two-way cross-hatching is the extracellular part of APP, dark vertical hatching is the transmembrane domain of APP, light vertical hatching is the intracellular domain of APP, coarse cross-hatching indicates the P30 epitope, and fine cross-hatching indicates the P2 epitope. The full line box indicates A beta-42/43 and the fullline box and the dotted line box together indicate C-100. " ***Abeta*** " denotes A beta .

L4 ANSWER 5 OF 21 USPATFULL on STN

AN 2005:36976 USPATFULL

TI Therapeutic formulations for the treatment of beta-amyloid related diseases

IN Gervais, Francine, Ile Bizard, CANADA
Bellini, Francesco, Mount Royal, CANADA
PI US 2005031651 A1 20050210
AI US 2004-871537 A1 20040618 (10)
RLI Continuation-in-part of Ser. No. US 2003-746138, filed on 24 Dec 2003,
PENDING
PRAI WO 2003-CA2011 20031224
US 2002-436379P 20021224 (60)
US 2003-482214P 20030623 (60)
US 2003-480984P 20030623 (60)
US 2003-512116P 20031017 (60)
US 2003-482058P 20030623 (60)
US 2003-512135P 20031017 (60)
US 2003-480918P 20030623 (60)
US 2003-512017P 20031017 (60)
US 2003-480906P 20030623 (60)
US 2003-512047P 20031017 (60)
DT Utility
FS APPLICATION
LN.CNT 7983
INCL INCLM: 424/400.000
NCL NCLM: 424/400.000
IC [7]
ICM: A61K009-00
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 6 OF 21 USPATFULL on STN
AN 2005:10897 USPATFULL
TI Genes and polymorphisms on chromosome 10 associated with Alzheimer's
disease and other neurodegenerative diseases
IN Becker, Kenneth David, San Diego, CA, UNITED STATES
Velicelebi, Gonul, San Diego, CA, UNITED STATES
Elliott, Kathryn J., San Diego, CA, UNITED STATES
Wang, Xin, San Diego, CA, UNITED STATES
Tanzi, Rudolph E., Hull, MA, UNITED STATES
Bertram, Lars, Boston, MA, UNITED STATES
Saunders, Aleister J., Philadelphia, PA, UNITED STATES
Mullin, Kristina M., Weymouth, MA, UNITED STATES
Sampson, Andrew Joseph, Oakwood, OH, UNITED STATES
PI US 2005009031 A1 20050113
AI US 2003-600009 A1 20030618 (10)
RLI Continuation-in-part of Ser. No. US 2002-282174, filed on 25 Oct 2002,
PENDING Continuation-in-part of Ser. No. WO 2002-US34679, filed on 25
Oct 2002, PENDING
PRAI US 2001-339525P 20011025 (60)
US 2001-338010P 20011108 (60)
US 2001-336929P 20011108 (60)
US 2001-338363P 20011109 (60)
US 2001-337052P 20011204 (60)
US 2002-368919P 20020328 (60)
DT Utility
FS APPLICATION
LN.CNT 15528
INCL INCLM: 435/006.000
INCLS: 536/024.300
NCL NCLM: 435/006.000
NCLS: 536/024.300
IC [7]
ICM: C12Q001-68
ICS: C07H021-04
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 7 OF 21 USPATFULL on STN
AN 2004:334837 USPATFULL
TI Method for the prediction, diagnosis and differential diagnosis of
Alzheimer's disease
IN Vanderstichele, Hugo, Gent, BELGIUM
Vanmechelen, Eugene, Nazareth-Eke, BELGIUM
De Meyer, Geert, Gent, BELGIUM
Blennow, Kaj, Goteborg, SWEDEN
Kostanjevecki, Vesna, Sint-Denijs-Westrem, BELGIUM
PI US 2004265919 A1 20041230

AI US 2004-848686 A1 20040519 (10)
PRAI EP 2003-447120 20030522
US 2003-477621P 20030611 (60)
DT Utility
FS APPLICATION
LN.CNT 2860
INCL INCLM: 435/007.200
NCL NCLM: 435/007.200
IC [7]
ICM: G01N033-53
ICS: G01N033-567

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 8 OF 21 USPATFULL on STN
AN 2004:327335 USPATFULL
TI Methods of engineering spatially conserved motifs in polypeptides
IN Chan, John, Raleigh, NC, UNITED STATES
Zhang, Shengsheng, Framingham, MA, UNITED STATES
Baynes, Brian, Somerville, MA, UNITED STATES
PA Compound Therapeutics, Inc., Waltham, MA (U.S. corporation)
PI US 2004259155 A1 20041223
AI US 2003-676873 A1 20030930 (10)
PRAI US 2002-414688P 20020930 (60)
DT Utility
FS APPLICATION
LN.CNT 2745
INCL INCLM: 435/007.100
INCLS: 702/019.000
NCL NCLM: 435/007.100
NCLS: 702/019.000
IC [7]
ICM: G01N033-53
ICS: G06F019-00; G01N033-48; G01N033-50

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 9 OF 21 USPATFULL on STN
AN 2004:120535 USPATFULL
TI Peptides and methods of screening immunogenic peptide vaccines against
Alzheimer's Disease
IN Fitzer-Attas, Cheryl, Rehovot, ISRAEL
Chain, Daniel G., Jerusalem, ISRAEL
PI US 2004091945 A1 20040513
AI US 2003-619454 A1 20030716 (10)
PRAI US 2002-396245P 20020717 (60)
DT Utility
FS APPLICATION
LN.CNT 2604
INCL INCLM: 435/007.200
INCLS: 530/350.000
NCL NCLM: 435/007.200
NCLS: 530/350.000
IC [7]
ICM: G01N033-53
ICS: G01N033-567; C07K014-47

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 10 OF 21 USPATFULL on STN
AN 2004:107249 USPATFULL
TI Adzymes and uses thereof
IN Afeyan, Noubar B., Lexington, MA, UNITED STATES
Lee, Frank D., Chestnut Hill, MA, UNITED STATES
Wong, Gordon G., Brookline, MA, UNITED STATES
Das Gupta, Ruchira, Auburndale, MA, UNITED STATES
Baynes, Brian, Somerville, MA, UNITED STATES
PI US 2004081648 A1 20040429
AI US 2003-650592 A1 20030827 (10)
PRAI US 2002-406517P 20020827 (60)
US 2002-423754P 20021105 (60)
US 2002-430001P 20021127 (60)
DT Utility
FS APPLICATION
LN.CNT 8325

INCL INCLM: 424/094.630
INCLS: 435/226.000
NCL NCLM: 424/094.630
NCLS: 435/226.000
IC [7]
ICM: A61K038-48
ICS: C12N009-64

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 11 OF 21 USPATFULL on STN
AN 2004:107248 USPATFULL
TI Adzymes and uses thereof
IN Afeyan, Noubar B., Lexington, MA, UNITED STATES
Lee, Frank D., Chestnut Hill, MA, UNITED STATES
Wong, Gordon G., Brookline, MA, UNITED STATES
DàsGupta, Ruchira, Auburndale, MA, UNITED STATES
Baynes, Brian, Somerville, MA, UNITED STATES
PI US 2004081647 A1 20040429
AI US 2003-650591 A1 20030827 (10)
PRAI US 2002-406517P 20020827 (60)
US 2002-423754P 20021105 (60)
US 2002-430001P 20021127 (60)

DT Utility
FS APPLICATION

LN.CNT 7919

INCL INCLM: 424/094.630
INCLS: 435/069.700; 435/226.000
NCL NCLM: 424/094.630
NCLS: 435/069.700; 435/226.000
IC [7]
ICM: A61K038-48
ICS: C12N009-64; C12P021-04

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 12 OF 21 USPATFULL on STN
AN 2004:51633 USPATFULL
TI Amine 1,2- and 1,3-diol compounds
IN Romero, Arthur G., Kalamazoo, MI, UNITED STATES
Schostarez, Heinrich J., Portage, MI, UNITED STATES
Roels, Christina M., Battle Creek, MI, UNITED STATES
PI US 2004039064 A1 20040226
AI US 2002-299739 A1 20021119 (10)
PRAI US 2001-333081P 20011119 (60)
US 2001-334000P 20011128 (60)
US 2002-362752P 20020308 (60)

DT Utility
FS APPLICATION

LN.CNT 10130

INCL INCLM: 514/651.000
INCLS: 564/355.000
NCL NCLM: 514/651.000
NCLS: 564/355.000
IC [7]
ICM: A61K031-137

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 13 OF 21 USPATFULL on STN
AN 2004:44501 USPATFULL
TI Proteins and nucleic acids encoding same
IN Tchernev, Velizar T., Branford, CT, UNITED STATES
Spytek, Kimberly A., New Haven, CT, UNITED STATES
Zerhusen, Bryan D., Branford, CT, UNITED STATES
Patturajan, Meera, Branford, CT, UNITED STATES
Shimkets, Richard A., West Haven, CT, UNITED STATES
Li, Li, Branford, CT, UNITED STATES
Gangolli, Esha A., Madison, CT, UNITED STATES
Padigaru, Muralidhara, Branford, CT, UNITED STATES
Anderson, David W., Branford, CT, UNITED STATES
Rastelli, Luca, Guilford, CT, UNITED STATES
Miller, Charles E., Hill Drive, CT, UNITED STATES
Gerlach, Valerie, Branford, CT, UNITED STATES
Taupier, Raymond J., JR., East Haven, CT, UNITED STATES

Gusev, Vladimir Y., UNITED STATES
 Colman, Steven D., Guilford, CT, UNITED STATES
 Wolenc, Adam Ryan, New Haven, CT, UNITED STATES
 Pena, Carol E. A., Guilford, CT, UNITED STATES
 Furtak, Katarzyna, Anosia, CT, UNITED STATES
 Grosse, William M., Bransford, CT, UNITED STATES
 Alsobrook, John P., II, Madison, CT, UNITED STATES
 Lepley, Denise M., Branford, CT, UNITED STATES
 Rieger, Daniel K., Branford, CT, UNITED STATES
 Burgess, Catherine E., Wethersfield, CT, UNITED STATES

PI	US 2004033493	A1	20040219
AI	US 2002-72012	A1	20020131 (10)
PRAI	US 2001-267459P		20010208 (60)
	US 2001-266975P		20010207 (60)
	US 2001-267057P		20010207 (60)
	US 2001-266767P		20010205 (60)
	US 2001-266406P		20010202 (60)
	US 2001-265395P		20010131 (60)
	US 2001-265412P		20010131 (60)
	US 2001-265517P		20010131 (60)
	US 2001-265514P		20010131 (60)
	US 2001-267823P		20010209 (60)
	US 2001-268974P		20010215 (60)
	US 2001-271855P		20010227 (60)
	US 2001-271839P		20010227 (60)
	US 2001-273046P		20010302 (60)
	US 2001-272788P		20010302 (60)
	US 2001-275989P		20010314 (60)
	US 2001-275925P		20010314 (60)
	US 2001-275947P		20010314 (60)
	US 2001-275950P		20010314 (60)
	US 2001-276450P		20010315 (60)
	US 2001-276448P		20010315 (60)
	US 2001-276397P		20010316 (60)
	US 2001-276768P		20010316 (60)
	US 2001-278652P		20010320 (60)
	US 2001-278775P		20010326 (60)
	US 2001-278778P		20010326 (60)
	US 2001-279882P		20010329 (60)
	US 2001-279884P		20010329 (60)
	US 2001-280147P		20010330 (60)
	US 2001-283083P		20010411 (60)
	US 2001-282992P		20010411 (60)
	US 2001-285133P		20010420 (60)
	US 2001-285749P		20010423 (60)
	US 2001-288327P		20010503 (60)
	US 2001-288504P		20010503 (60)
	US 2001-294047P		20010529 (60)
	US 2001-294473P		20010530 (60)
	US 2001-296964P		20010608 (60)
	US 2001-298959P		20010618 (60)
	US 2001-299324P		20010619 (60)
	US 2001-312020P		20010813 (60)
	US 2001-312908P		20010816 (60)
	US 2001-312889P		20010816 (60)
	US 2001-313930P		20010821 (60)
	US 2001-315470P		20010828 (60)
	US 2001-316447P		20010831 (60)
	US 2001-318115P		20010907 (60)
	US 2001-318118P		20010907 (60)
	US 2001-318740P		20010912 (60)
	US 2001-323379P		20010919 (60)
	US 2001-330308P		20011018 (60)
	US 2001-330245P		20011018 (60)
	US 2001-332701P		20011114 (60)
	US 2001-271664P		20010226 (60)

DT Utility
 FS APPLICATION

LN.CNT 59681

INCL INCLM: 435/006.000
 INCLS: 435/007.230; 435/069.300; 435/320.100; 435/325.000; 530/350.000;
 536/023.200; 435/183.000; 424/155.100

NCL NCLM: 435/006.000
NCLS: 435/007.230; 435/069.300; 435/320.100; 435/325.000; 530/350.000;
536/023.200; 435/183.000; 424/155.100

IC [7]
ICM: C12Q001-68
ICS: G01N033-574; C07H021-04; A61K039-395; C12N009-00; C12P021-02;
C12N005-06; C07K014-47

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 14 OF 21 USPATFULL on STN
AN 2004:18378 USPATFULL
TI Neurotoxic oligomers
IN Bush, Ashley, Somerville, MA, UNITED STATES
Cherny, Robert, Victoria, AUSTRALIA
PI US 2004013680 A1 20040122
AI US 2003-312437 A1 20030616 (10)
WO 2001-AU786 20010628

DT Utility
FS APPLICATION

LN.CNT 1214

INCL INCLM: 424/185.100
INCLS: 530/400.000

NCL NCLM: 424/185.100
NCLS: 530/400.000

IC [7]
ICM: A61K039-00
ICS: C07K014-47

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 15 OF 21 USPATFULL on STN
AN 2003:325156 USPATFULL
TI Aza hydroxylated ethyl amine compounds utility
IN Schostarez, Heinrich, Portage, MI, UNITED STATES
Chrusciel, Robert Alan, Portage, MI, UNITED STATES
Centko, Rebecca S., Portage, MI, UNITED STATES

PI US 2003229138 A1 20031211
AI US 2002-152601 A1 20020522 (10)
PRAI US 2001-292856P 20010522 (60)
US 2001-301355P 20010627 (60)
US 2002-360601P 20020301 (60)

DT Utility
FS APPLICATION

LN.CNT 6845

INCL INCLM: 514/526.000
INCLS: 514/664.000; 514/561.000; 514/651.000; 514/614.000; 558/446.000;
562/561.000; 564/147.000; 564/347.000; 564/464.000; 558/445.000

NCL NCLM: 514/526.000
NCLS: 514/664.000; 514/561.000; 514/651.000; 514/614.000; 558/446.000;
562/561.000; 564/147.000; 564/347.000; 564/464.000; 558/445.000

IC [7]
ICM: A61K031-275
ICS: A61K031-195; A61K031-16; A61K031-15; A61K031-137

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 16 OF 21 USPATFULL on STN
AN 2003:318636 USPATFULL
TI Genes and polymorphisms on chromosome 10 associated with Alzheimer's
disease and other neurodegenerative diseases
IN Becker, Kenneth David, San Diego, CA, UNITED STATES
Velicelebi, Gonul, San Diego, CA, UNITED STATES
Ellliott, Kathryn J., San Diego, CA, UNITED STATES
Wang, Xin, San Diego, CA, UNITED STATES
Tanzi, Rudolph E., Hull, MA, UNITED STATES
Bertram, Lars, Brighton, MA, UNITED STATES
Saunders, Aleister J., Philadelphia, PA, UNITED STATES
Mullin, Kristina M., south Boston, MA, UNITED STATES
Sampson, Andrew Joseph, Dayton, OH, UNITED STATES
PA The General Hospital Corporation (U.S. corporation)
PI US 2003224380 A1 20031204
AI US 2002-282174 A1 20021025 (10)
PRAI US 2001-339525P 20011025 (60)
US 2001-338010P 20011108 (60)

US 2001-336929P 20011108 (60)
US 2001-338363P 20011109 (60)
US 2001-337052P 20011204 (60)
US 2002-368919P 20020328 (60)
US 2001-348065P 20011025 (60)
US 2001-336983P 20011102 (60)

DT Utility
FS APPLICATION

LN.CNT 13662

INCL INCLM: 435/006.000

NCL NCLM: 435/006.000

IC [7]

ICM: C12Q001-68

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 17 OF 21 USPATFULL on STN
AN 2003:225306 USPATFULL
TI Novel method for down-regulation of amyloid
IN Rasmussen, Peter Birk, Horsholm, DENMARK
Jensen, Martin Roland, Horsholm, DENMARK
Nielsen, Klaus Gregorius, Horsholm, DENMARK
Koefoed, Peter, Horsholm, DENMARK
Degan, Florence Dal, Horsholm, DENMARK

PI US 2003157117 A1 20030821
AI US 2002-223809 A1 20020820 (10)
PRAI DK 2001-1231 20010820
DK 2002-58 20020416
US 2001-337543P 20011022 (60)
US 2002-373027P 20020416 (60)

DT Utility
FS APPLICATION

LN.CNT 3681

INCL INCLM: 424/185.100

INCLS: 435/226.000

NCL NCLM: 424/185.100

NCLS: 435/226.000

IC [7]

ICM: A61K039-00

ICS: C12N009-64

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 18 OF 21 USPATFULL on STN
AN 2003:135733 USPATFULL
TI Transgenic animal model of neurodegenerative disorders
IN St. George-Hyslop, Peter H., Toronto, CANADA
Fraser, Paul E., Toronto, CANADA
Westaway, David, Etobicoke, CANADA

PI US 2003093822 A1 20030515
AI US 2001-884629 A1 20010619 (9)
PRAI US 2000-212534P 20000620 (60)

DT Utility
FS APPLICATION

LN.CNT 1380

INCL INCLM: 800/018.000

INCLS: 800/012.000

NCL NCLM: 800/018.000

NCLS: 800/012.000

IC [7]

ICM: A01K067-027

L4 ANSWER 19 OF 21 USPATFULL on STN
AN 2003:126727 USPATFULL
TI Novel methods for down-regulation of amyloid
IN Jensen, Martin Roland, Horsholm, DENMARK
Birk, Peter, Horsholm, DENMARK
Nielsen, Klaus Gregorius, Horsholm, DENMARK

PI US 2003086938 A1 20030508
AI US 2002-204362 A1 20020816 (10)
WO 2001-DK113 20010219
PRAI DK 2000-265 20000221

DT Utility
FS APPLICATION

LN.CNT 3114
INCL INCLM: 424/185.100
NCL NCLM: 424/185.100
IC [7]
ICM: A61K039-00
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 20 OF 21 USPATFULL on STN
AN 2002:191196 USPATFULL
TI Methods and compositions for stimulating CD 45 and thereby suppressing
microglial activation associated with Alzheimer's disease
IN Tan, Jun, Tampa, FL, UNITED STATES
Town, Terrence, Tampa, FL, UNITED STATES
Mullan, Michael, Tampa, FL, UNITED STATES
PI US 2002102259 A1 20020801
AI US 2001-985598 A1 20011105 (9)
PRAI US 2000-245608P 20001103 (60)
DT Utility
FS APPLICATION
LN.CNT 1744
INCL INCLM: 424/144.100
NCL NCLM: 424/144.100
IC [7]
ICM: A61K039-395
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 21 OF 21 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
AN 2002-130835 [17] WPIDS
DNC C2002-040215
TI Treatment and prevention of conditions characterized by pathological
aggregation and accumulation of a specific protein associated with
oxidative damage and tyrosine-cross-link formation..
DC B04 D16
IN BUSH, A; CHERNY, R
PA (GEHO) GEN HOSPITAL CORP; (PRAN-N) PRANA BIOTECHNOLOGY LTD; (BUSH-I) BUSH
A; (CHER-I) CHERNY R
CYC 97
PI WO 2002000245 A1 20020103 (200217)* EN 59 A61K038-16
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU
SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001068828 A 20020108 (200235) A61K038-16
EP 1296705 A1 20030402 (200325) EN A61K038-16
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
RO SE SI TR
CN 1450908 A 20031022 (200406) A61K038-16
US 2004013680 A1 20040122 (200407) A61K039-00
JP 2004501204 W 20040115 (200410) 96 A61K038-00
ADT WO 2002000245 A1 WO 2001-AU786 20010628; AU 2001068828 A AU 2001-68828
20010628; EP 1296705 A1 EP 2001-947033 20010628, WO 2001-AU786 20010628;
CN 1450908 A CN 2001-813312 20010628; US 2004013680 A1 WO 2001-AU786
20010628, US 2003-312437 20030616; JP 2004501204 W WO 2001-AU786 20010628,
JP 2002-505026 20010628
FDT AU 2001068828 A Based on WO 2002000245; EP 1296705 A1 Based on WO
2002000245; JP 2004501204 W Based on WO 2002000245
PRAI US 2000-242177P 20001023; US 2000-214779P 20000628;
US 2003-312437 20030616
IC ICM A61K038-00; A61K038-16; A61K039-00
ICS A61K039-395; A61P021-00; A61P025-02; A61P025-14; A61P025-16;
A61P025-28; A61P027-12; C07K014-47; G01N033-53
STN INTERNATIONAL LOGOFF AT 17:33:43 ON 22 MAR 2005